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An Exact Line Integral Representation of the PO Radiation Integral from a Flat Perfectly Conducting Surfaces Illuminated by Elementary Electric or Magnetic Dipoles

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Abstract: In this paper, a line integral representation for the PO radiation integral from a flat perfectly conducting surface, illuminated by an arbitrary oriented elementary either electric or magnetic dipole, is presented. No restriction is imposed on the position of the source and of the observation point. The main application of this result is the acceleration of the numerical PO integration for electrically large surfaces. The formulation is based on the application of the equivalence principle to a projecting surface which allows the analytical evaluation in closed form of one of the two-fold surface integral which define the radiated field at any space point. Although similar solutions has been suggested by other authors, our final outcome is simple, clearly interpretable, and easily applicable with respect to previous results.

Key Words: PO radiation integral, Kirchhoff aperture field, equivalence principle

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